

(12) UK Patent Application (19) GB (11) 2 370 240 (13) A

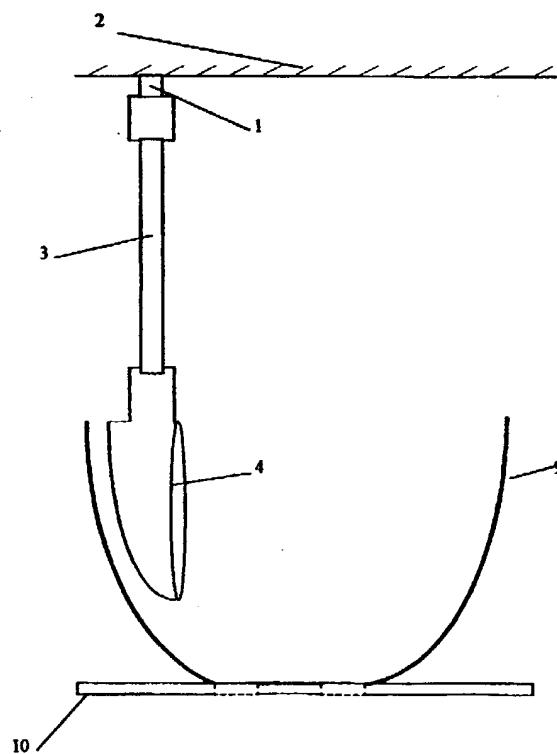
(43) Date of A Publication 26.06.2002

(21) Application No 0031231.4	(51) INT CL ⁷ H05B 6/80, A47J 43/07
(22) Date of Filing 21.12.2000	(52) UK CL (Edition T) B1C CPJB
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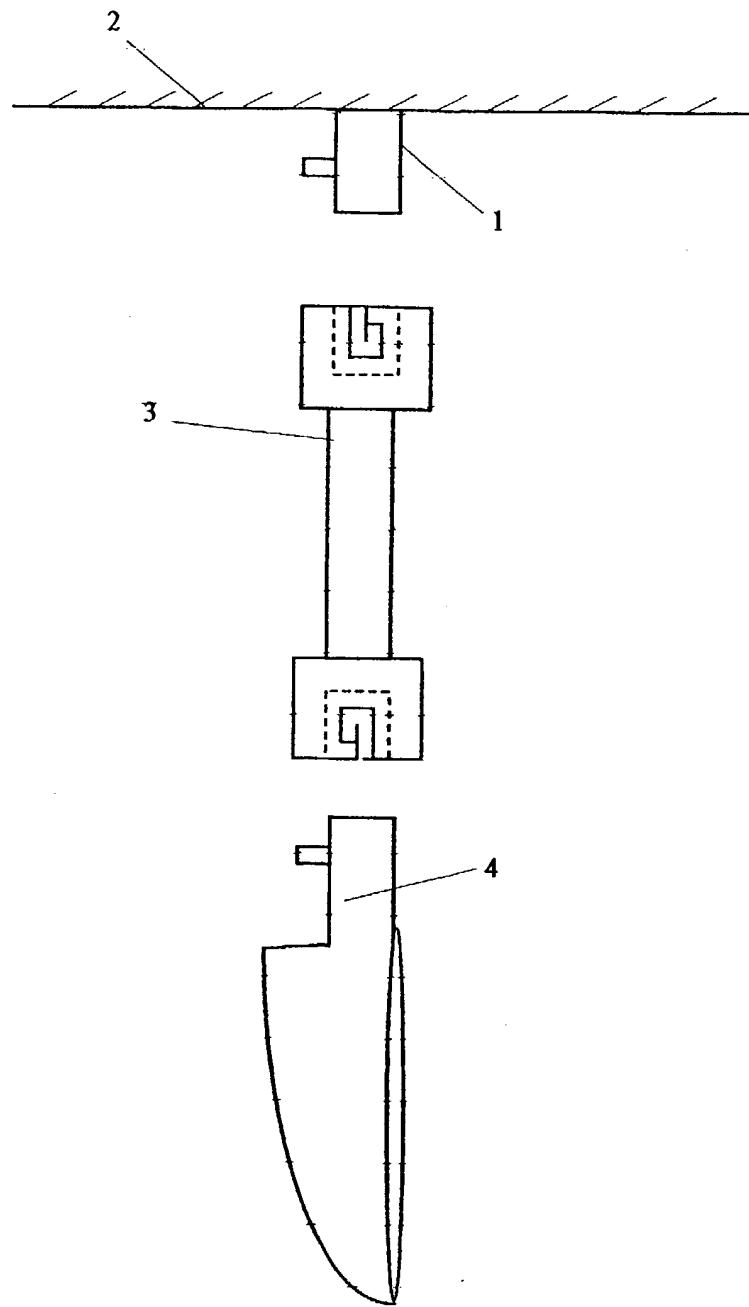
(54) Abstract Title
Microwave oven food stirrer

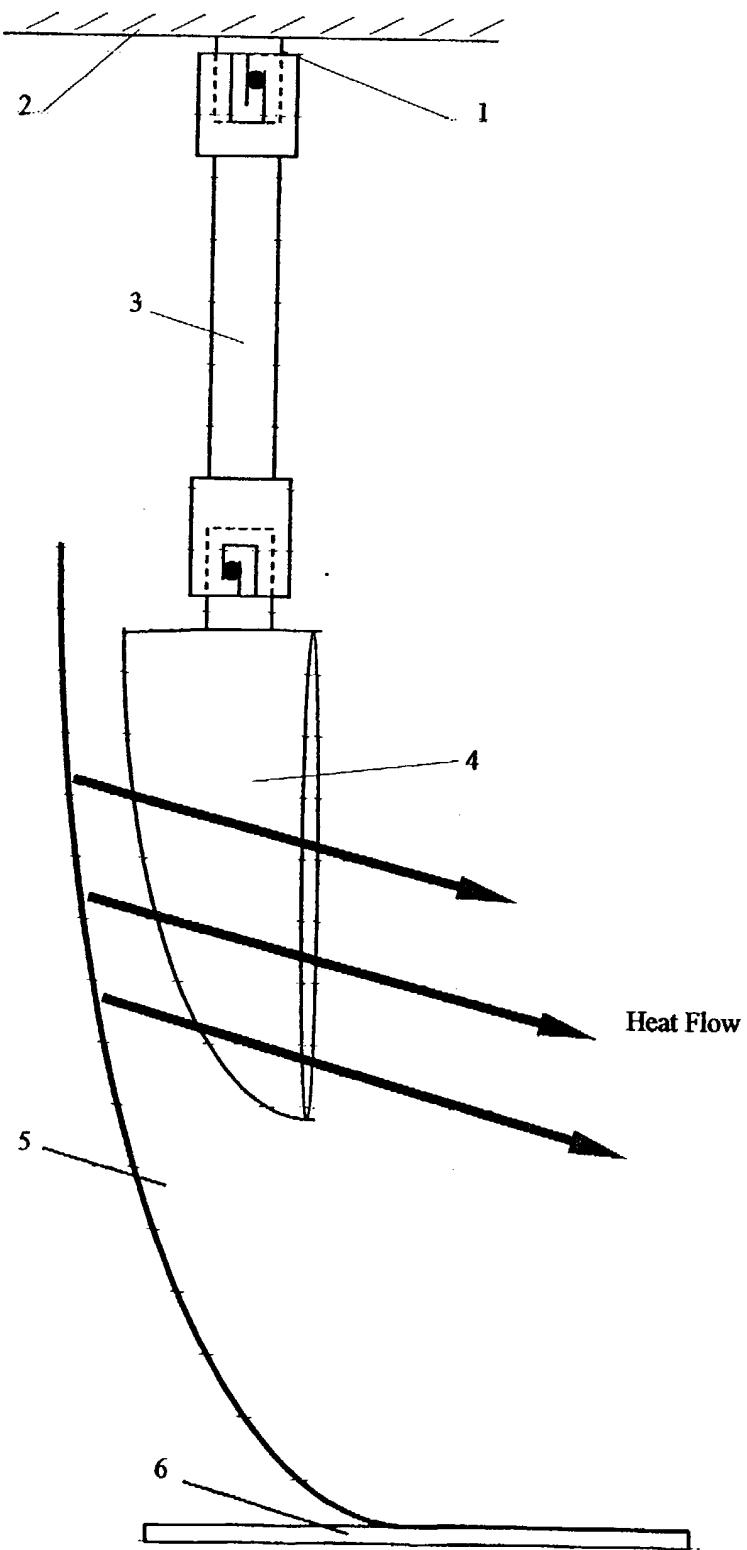
(57) A food stirring device comprises a roof attachment 1, shaft 3 and blade 4. The device makes use of relative motion of a rotary plate 4 for stirring food so that an even heat distribution throughout the food is facilitated. The device is fixed to the top of the oven compartment 2 by an adhesive.

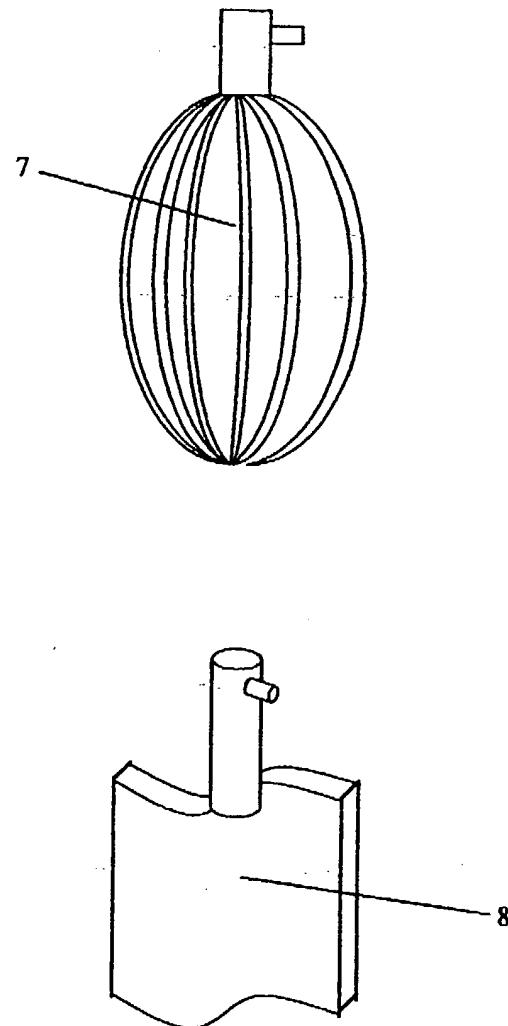
FIGURE 5

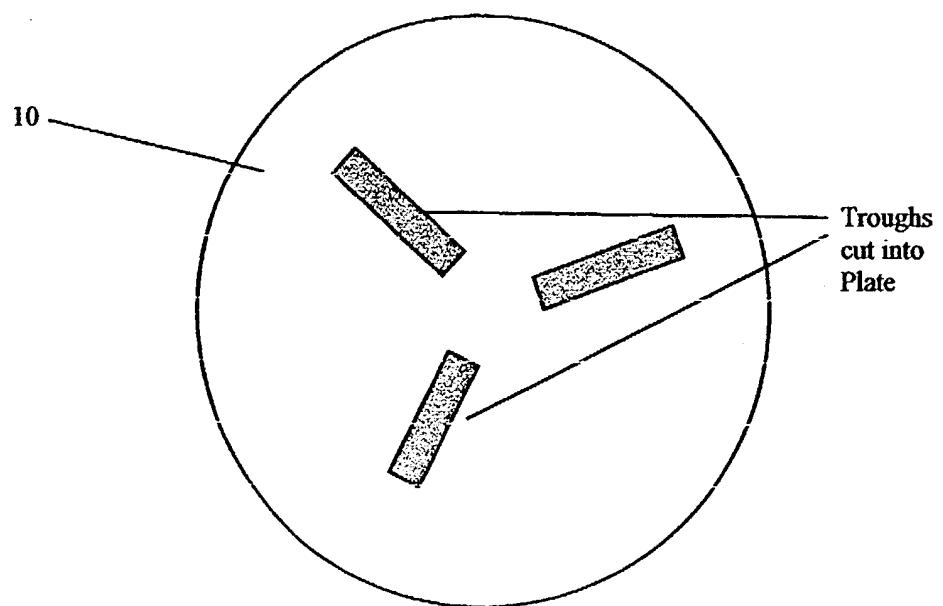
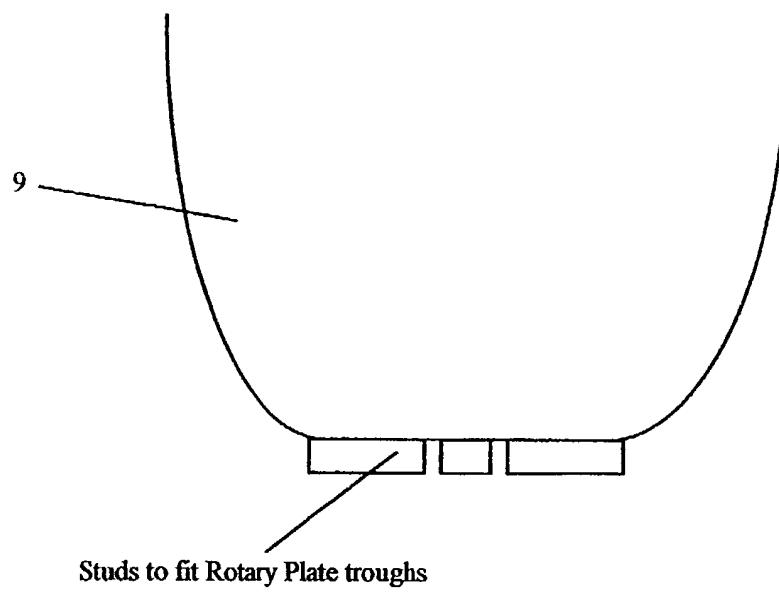


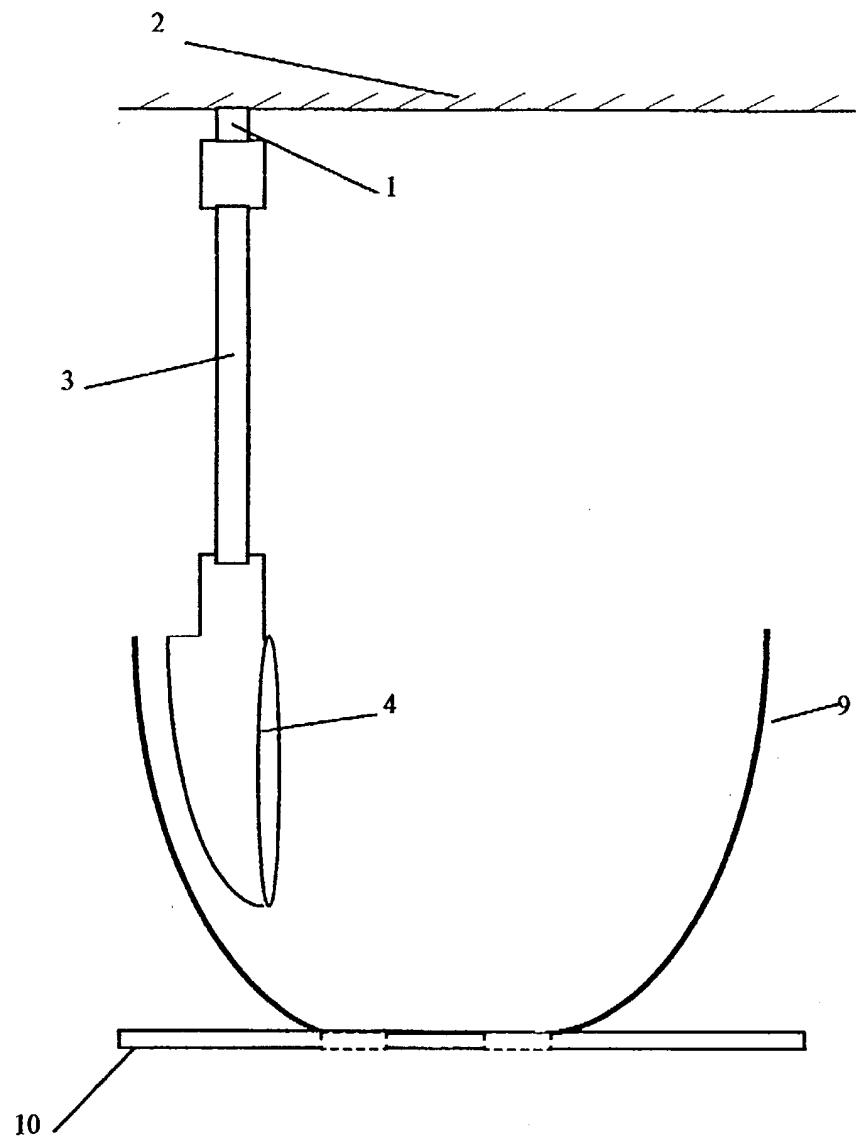
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MICROWAVE OVEN FOOD-STIRRER - FIGURE 1

MICROWAVE OVEN FOOD-STIRRER - FIGURE 2

MICROWAVE OVEN FOOD-STIRRER - FIGURE 3

MICROWAVE OVEN FOOD-STIRRER - FIGURE 4

MICROWAVE OVEN FOOD-STIRRER - FIGURE 5

MICROWAVE OVEN FOOD-STIRRER**DESCRIPTION**

1. This invention relates to a food-stirring device for use with microwave ovens (hereafter referred to as a Microwave Oven Food-Stirrer).

BACKGROUND

2. It has been known for some time that the distribution of energy within a microwave oven is not uniform. There have been several developments in microwave technology to try to overcome the inconveniences this causes with microwave cooking (a rotary plate being one of them). However, it is still a fact today that when heating or cooking a dish that requires an even distribution of heat, the cooking period must be interrupted regularly in order to disperse the energy by manual means (ie dishes need a good stir every now and then!).

3. The idea of a Microwave Oven Food-Stirrer was born from the fact that while cooking or re-heating any of several food types in a microwave oven, there is a need to return to the oven periodically to stir the food in order to ensure that it is cooked/re-heated evenly. A microwave oven capable of stirring the food itself would give a far more even distribution of energy throughout the food and allow the cooking period to be continuous (a procedure recommended for best results in most dishes).

4. A Microwave Oven Food-Stirrer is one method to facilitate this function. While this invention would be best incorporated into the design of an oven, it could also be added as a separate stand-alone enhancement to any microwave oven which utilises a rotary plate.

PURPOSES

5. Primary. The primary purpose of this invention is to enhance the distribution of heat through food which is being cooked or heated in a microwave oven.

6. Secondary. A secondary purpose is to provide a stirring or whisking capability during the process of microwave cooking.

METHOD

7. The method by which the purposes of this invention are met is through use of the internal rotary plate (Item 6) of a microwave oven to provide rotation of the food/beverage, while a stationary stirring implement placed into the food/beverage creates a relative stirring/mixing action through it.

DETAILS

8. Specific details of the invention are as follows:

a. All constituent parts of the invention would need to be manufactured in a microwave-proof material.

b. The main constituent parts of the invention are:

- (1) Roof Fittings.
- (2) Shafts.
- (3) Blades.
- (4) Adhesive.

9. Roof Fitting (Figure 1, Item 1). Roof Fittings are male 'bayonet' type fittings. Ideally the Roof Fittings would be incorporated into the microwave oven design, but could be fitted retrospectively to any microwave oven using suitable adhesive. Three or more Roof Fittings would be secured at different radial settings from a point on the roof (Item 2) directly above the centre of the Rotary Plate. This would allow the Microwave Oven Food-Stirrer to be located in a position to provide an optimum mixing capability for different sized receptacles.

10. Shaft (Figure 1, Item 3). Microwave Oven Food-Stirrer Shafts are rods with female 'bayonet' type receptacles at either end. A number of Microwave Oven Food-Stirrer Shafts of differing lengths are included as part of the invention to allow for different sized food receptacles/bowls (Item 5).

11. Blade (Figure 1, Item 4). Blades have a male 'bayonet' type fitting incorporated into their design for attachment to Shafts. Blades are designed for different mixing/stirring functions and different sized receptacles/bowls. (A Blade designed similar to the type shown in Figure 1, Item 4 would be positioned against the inside edge of a bowl in order to bring the hotter food toward the centre - see Figure 2. Other blade options are 'Whisk' type blades (Figure 3, Item 7), 'Wave' type blades (Figure 3, Item 8).

12. Optional constituent parts/design features are:

a. Secure Bowl and Rotary Plate (Figure 4, Items 9 and 10). To ensure that the food receptacle maintains its rotation with the rotary plate while using the Microwave Oven Food Stirrer, a rotary plate and bowl with inter-locking troughs and wedges as shown at Figure 3 may be used. (Alternatively, a non-slip mat could be used to secure the bowl).

b. Secondary Rotation. To enhance the stirring/whisking effect, the Microwave Oven Food Stirrer, as an integral part of a microwave oven, could be designed to rotate through its 'point of contact' with the oven roof.

13. The complete assembly is shown at Figure 5.

CLAIMS

1. A device for stirring food in a Microwave Oven comprising roof fittings, shafts, blades, adhesive and a secure bowl and rotary plate assembly.
2. A device for stirring food in a microwave oven as claimed in Claim 1 for which the method of stirring is provided by the relative motion of the device in relation to the food/beverage rotated by use of an oven's internal rotary dish.
3. A device for stirring food in a microwave oven as claimed in Claim 1 and 2 for which the purposes are to enhance the distribution of heat through food which is being cooked or heated and/or to provide a stirring or whisking capability during the process of microwave cooking.
4. A device for stirring food in a microwave oven as described herein with reference to Figures 1 – 5 of the accompanying drawing.

Amendments to the claims have been filed as follows

1. A device for stirring food held in a receptacle in any size of microwave oven which comprises a rotary plate as part of its internal features.
2. A device as claimed in Claim 1 for which the purposes are to enhance the distribution of heat through food which is being cooked or heated in a microwave oven and/or to provide an uninterrupted stirring or whisking capability during the process of microwave cooking.
3. A device as claimed in Claims 1 and 2 which comprises:
 - a. One or more single-component female bayonet-fitting roof fittings (housings) secured at different positions along the radial extending from the point on the ceiling of the microwave oven directly above the centre of the Rotary Plate to meet the rear wall of the oven at a perpendicular so as to facilitate variable positioning of the device in order to achieve an optimum stirring function in any sized receptacle.
 - b. A number of corresponding double-ended male bayonet-fitting shafts of different lengths to facilitate the variable length of the device.
 - c. A series of corresponding female bayonet-fitting blades optimised in design for different stirring functions.
 - d. Adhesive to secure roof fittings to the microwave oven roof.
 - e. An optional secure bowl and rotary plate assembly consisting of a studded bowl and a complementing slotted rotary plate.
4. A device as claimed in Claims 1, 2 and 3 for which, during operation:
 - a. Shafts are engaged and secured within roof fittings.
 - b. Blades are engaged and secured to shafts.
5. A device as claimed in Claims 1, 2, 3 and 4 for which the method of stirring is provided by the relative motion of the device in relation to the food/beverage which is rotated by use of the food/beverage receptacle turning in conjunction with an oven's internal rotary plate.
6. A device as claimed in Claims 1, 2, 3, 4 and 5 which may be either part incorporated into the original build of a microwave oven during production or fitted retrospectively by a layman to any existing microwave oven with the use of suitable adhesive.
7. A device as claimed in Claims 1, 2, 3, 4, 5 and 6 which, when in use, enhances the functioning of a microwave oven and, when not in use, does not impede the

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normal functioning of a microwave oven through the retention of its permanent fittings within the oven cavity.

8. A device as claimed in Claims 1, 2, 3, 4, 5, 6 and 7 which may be incorporated to be an integral part of the oven design such that it rotates about a vertical axis through the oven roof to provide a secondary turning affect through the food/beverage, thus enhancing the mixing/stirring capability of the device.

9. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7 and 8 which has an insignificant effect on the reduction of the volumetric capacity of the microwave oven cavity when installed completely and more so when not in use with only its roof fittings in place.

10. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8 and 9 which, by virtue of its design, is able to be variably positioned along the radial extending from the point on the ceiling of the microwave oven directly above the centre of the Rotary Plate to meet the rear wall of the oven at a perpendicular.

11. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 which, by virtue of its design, allows its length along its longitudinal axis and thus its depth within a receptacle to be varied.

12. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 which, by virtue of its design, is supported in total through its contact with the ceiling of a microwave oven and is therefore not reliant on support directly or otherwise from either, the oven floor or walls, or the receptacle containing the food.

13. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 for which the stirring item is positioned to carry out its function by first placing it into the receptacle containing the food/beverage to be stirred, thence placing the receptacle containing the stirring item into the oven cavity, thence offering the stirring item to the roof fitting where it is secured.

14. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13 for which the stirring item is removed from the oven after use by decoupling it from the roof fitting such that it is retained in the receptacle, thence removing the receptacle from the oven cavity and thence removing the stirring item from the receptacle.

15. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14 and designed such that the easy cleaning of both removable parts and those retained in the oven cavity after use has been a primary consideration.

16. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 which, as either a layman-installed accessory to an existing microwave oven, or as incorporated in its basic form into a new microwave oven, has no moving mechanical or electrical parts.

17. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 the stirring item for which, when installed in its roof fitting, is permitted neither movement along its vertical axis nor pivotal movement about a horizontal axis.

18. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17 for which the blades are designed to optimise different stirring functions and which has amongst its blade designs, 'wave' and 'whisk' type blades.

19. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 which in a single-production form is compatible with all sizes of microwave oven and therefore requires no specific sizing modification/allocation during manufacture.

20. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19 for which possible movement of the receptacle during operation is prevented by the optional use of either a non-slip mat placed between the receptacle and the oven rotary plate or by use of a secure bowl and rotary plate assembly consisting of a studded bowl and a complementing slotted rotary plate.

21. A device as claimed in Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 which, in order to carry out its function, requires no clamping or fastening methods to secure either its component parts or a receptacle, other than the fixing methods previously described herein.

22. A device for stirring food in a microwave oven as described herein with reference to Figures 1 – 5 of the accompanying drawing.



Application No: GB 0031231.4
Claims searched: 1 to 4

Examiner: Matthew Parker
Date of search: 16 January 2002

Patents Act 1977

Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): B1C

Int Cl (Ed.7): A47J

H05B: 6/60

Other: Online: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2300095 A (YINN), see Figure 3	1-3
X	GB 2230409 A (BURTON), see Figure 1	1-3
X	GB 2159027 A (THORN), see Figure 2	1-3
X	EP 0312373 A1 (RAYTHEON), see Figure 1	1-3
X	WO 93/10648 A1 (JANNAWAY), see Figure 5	1-3

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	B	Patent document published on or after, but with priority date earlier than, the filing date of this application.